

CURRICULUM VITAE
David N. Standing

PERSONAL

Birthplace: Manchester, United Kingdom

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EDUCATION

1970-1974 St. John's College, Oxford University. B.A. (in Chemistry), 1974

1974-1980 Department of Chemistry, Harvard University. Ph.D. (in Bioorganic Chemistry), June 1980 (thesis advisor: Prof. J. R. Knowles)

PROFESSIONAL POSITIONS

1975-1976 Teaching Fellow, Chemistry department, Harvard

1976-1980 Departmental NMR Service Operator and Instructor, Harvard

1980-1982 Postgraduate Research Biochemist, Department of Biochemistry & Biophysics, University of California, San Francisco

1982-1984 Assistant Research Biochemist, UCSF

1984-1994 Assistant Professor, UCSF

1994-1998 Group Leader, Hepatitis, Virology Department, Bristol-Myers Squibb Research Institute, Wallingford, CT

1998-1999 Research Fellow, Virology Department, Schering Plough Research Institute, Kenilworth, New Jersey

1999-2000	Associate Director, Virology Department, Schering Plough Research Institute, Kenilworth, New Jersey
2000-2002	Executive Director of Research, Novirio Pharmaceuticals, Inc., Cambridge, Massachusetts
2002-2006	Vice President of Biology, Idenix Pharmaceuticals, Inc. (formerly Novirio Pharmaceuticals, Inc.), Cambridge, Massachusetts
2006-2007	Senior Vice President of Biology, Idenix Pharmaceuticals, Inc., Cambridge, Massachusetts
Dec 2007	Executive Vice President of Biology, Idenix Pharmaceuticals, Inc. Cambridge, Massachusetts

TEACHING EXPERIENCE

1975-1980	Teaching Fellow, Chemistry Department, Harvard Departmental NMR Service Operator and Instructor
1987-1989	Lecturer, basic biochemistry, School of Podiatry, S. F.
1990-1994	Lecturer, basic biochemistry, Schools of Dentistry & Pharmacy, U.C.S.F.

PROFESSIONAL AWARDS/HONORS/ACTIVITIES

1974-1978	Scholarship to Harvard University
1992	Appointed Member, UCSF Liver Center
1993	Elected Organizer, Annual Molecular Biology of Hepatitis Viruses Meeting, held at U.C San Diego, July 23-26, 1995
1994-1995	Executive Committee Member, UCSF Liver Center
1995	Member, US-Japan Binational Hepatitis Panel
1996	President's Award, Bristol Myers Squibb. For contributions to the development of BMS-200475 (Entecavir) a new inhibitor of hepatitis B virus replication
1999	Member, NIH study section. RFA DK-98-017 on the Natural History, Prevention and Pathogenesis of Hepatitis C virus
1994 to Present	Ad hoc reviewer for Journal of Virology, Virology, Gastroenterology now Hepatology, Journal of Hepatology,

	Journal of Experimental Medicine, Journal of Infectious Diseases, Journal of Biological Chemistry, Nucleic Acids Research, Journal General Virology, Gene, Antiviral Agents and Chemotherapy, Antimicrobial Agents and Chemotherapy.
2007 to Present	Member of the Scientific Organizing Committee for the International Workshop on Hepatitis C: Resistance and New Compounds
2007 to Present	Member of the HCV Drug Resistance Advisory Group, part of the HIV forum.

SOCIETIES

American Society for Biochemistry and Molecular Biology

American Society for Microbiology

American Association for the Study of Liver Disease

CONSULTANCIES

1993-1995 Chiron Corporation, Emeryville, CA

1990, 1994 Genentech, South San Francisco, CA

SELECTED PUBLICATIONS

1. **Webb MR, Strandring DN, and Knowles JR.** 1977. Phosphorus-31 nuclear magnetic resonance of dihydroxyacetone phosphate in the presence of triosephosphate isomerase. The question of nonproductive binding of the substrates hydrate. *Biochemistry* 16:2738-2741.
2. **Staros JV, Bayley JHP, Strandring DN, and Knowles JR.** 1978. Reduction of aryl azides by thiols: implications for the use of photoaffinity reagents. *Biochem. Biophys. Res. Commun.* 80:568-572.
3. **Bayley H, Strandring DN, and Knowles JR.** 1978. Propane-1,3-dithiol: a selective reagent for the efficient reduction of alkyl and aryl azides to amines. *Tet. Letts.* 39:3633-3634.
4. **Strandring DN and Knowles JR.** 1980. Photoaffinity labeling of lactate dehydrogenase by the carbene derived from the three-diazirino analogue of nicotinamide adenine dinucleotide. *Biochemistry* 19:2811-2816.
5. **Strandring DN, Venegas A, and Rutter WJ.** 1981. Yeast tRNA^{leu3} gene transcribed and spliced in a HeLa cell extract. *Proc. Nat. Acad. Sci. USA* 78:5963-5967.
6. **Quinto C, Quiroga M, Swain WF, Nikovits WCJ, Strandring DN, Pictet RL, Valenzuela P, and Rutter WJ.** 1982. Rat preprocarboxypeptidase A: cDNA sequence and preliminary characterization of the gene. *Proc. Nat. Acad. Sci. USA* 79:31-35.
7. **Shaul Y, Strandring DN, Ziemer M, Garcia P, Hsu H, Laub O, Rall L, Valenzuela P, and Rutter WJ.** 1983. Transcription and integration of hepatitis B virus, p. 67-70. *In* L. Overby, F. Deinhardt and J. Deinhardt (ed.), *Viral Hepatitis: second International Max von Pettenkofer Symposium*. Marcel Dekker, Inc., New York and Basel.
8. **Laub O, Rall LB, Truett M, Shaul Y, Strandring DN, Valenzuela P, and Rutter WJ.** 1983. Synthesis of hepatitis B surface antigen in mammalian cell: expression of the entire gene and the coding region. *J. Virol.* 48:271-280.
9. **Strandring DN, Rall LB, Laub O, and Rutter WJ.** 1983. Hepatitis B virus encodes an RNA polymerase III transcript. *Mol. Cell Biol.* 3:1774-1782.
10. **Rall LB, Strandring DN, Laub O, and Rutter WJ.** 1983. Transcription of hepatitis B virus by RNA polymerase II. *Mol. Cell Biol.* 3:1766-1773.
11. **Strandring DN, Rutter WJ, Varmus HE, and Ganem D.** 1984. Transcription of the hepatitis B virus surface antigen gene in cultured murine cells initiates within the presurface region. *J. Virol.* 50:563-571.

12. **Rutter WJ, Ziemer M, Ou J, Shaul Y, Laub O, Garcia P, and Standring DN.** 1984. Transcription units of hepatitis B virus genes and structure and expression of integrated viral sequences, p. 67-86. *In* G. L. Vyas, J. L. Dienstag and J. Hoofnagle (ed.), *Viral Hepatitis and Liver Disease*. Grune and Stratton, Orlando, Florida.
13. **Ebina Y, Edery M, Ellis L, Standring DN, Beaudoin J, Roth RA, and Rutter WJ.** 1985. Expression of a functional human insulin receptor from a cloned cDNA in Chinese hamster ovary cells. *Proc. Natl. Acad. Sci. USA* 82:8014-8018.
14. **Standring DN and Rutter WJ.** 1986. The molecular analysis of hepatitis B virus, p. 311-333. *In* H. Popper and F. Schaffner (ed.), *Progress in Liver Disease*. Grune and Stratton, Orlando, Florida.
15. **Standring DN, Ou JH, and Rutter WJ.** 1986. Assembly of viral particles in *Xenopus* oocytes: pre-surface antigens regulate secretion of the hepatitis B viral surface envelope particle. *Proc. Natl. Acad. Sci. USA* 83:9338-9342.
16. **Morgan DO, Edman JC, Standring DN, Fried VA, Smith MC, Roth RA, and Rutter WJ.** 1987. Insulin-like growth factor II receptor as a multifunctional binding protein. *Nature* 329:301-307.
17. **Standring DN, Ou JH, and Rutter WJ.** 1987. Expression of hepatitis B viral antigens in *Xenopus* oocytes. *UCLA Symp. Mol. Cell. Biol. New Series* 70:117-127.
18. **Standring DN, Ou JH, Masiarz FR, and Rutter WJ.** 1988. A signal peptide encoded within the precore region of hepatitis B virus directs the secretion of a heterogeneous population of e antigens in *Xenopus* oocytes. *Proc. Natl. Acad. Sci. USA* 85:8405-8409.
19. **Standring DN.** 1991. The molecular biology of the hepatitis B virus core protein, p. 145-169. *In* A. McLachlan (ed.), *Molecular biology of the hepatitis B virus*. CRC Press, Boca Raton, Florida.
20. **Zhou S and Standring DN.** 1991. Production of hepatitis B virus nucleocapsidlike core particles in *Xenopus* oocytes; assembly occurs mainly in the cytoplasm and does not require the nucleus. *J. Virol.* 65:5457-5464.
21. **Yang SQ, Walter M, and Standring DN.** 1992. Hepatitis B virus p25 precore protein accumulates in *Xenopus* oocytes as an untranslocated phosphoprotein with an uncleaved signal peptide. *J. Virol.* 66:37-45.
22. **Seifer M and Standring DN.** 1992. Improved sensitivity of detection of the hepatitis B virus capsid protein using an ELISA amplified by ELAST. *Biotech Update (Dupont)* 7:120-124.
23. **Zhou S, Yang SQ, and Standring DN.** 1992. Characterization of hepatitis B virus capsid particle assembly in *Xenopus* oocytes. *J. Virol.* 66:3086-3092.

24. **Zhou S and Standring DN.** 1992. Cys residues of the hepatitis B virus capsid protein are not essential for the assembly of viral core particles but can influence their stability. *J. Virol.* 66:5393-5398.
25. **Hatton T, Zhou S, and Standring DN.** 1992. RNA- and DNA-binding activities in hepatitis B virus capsid protein: a model for their roles in viral replication. *J. Virol.* 66:5232-5241.
26. **Zhou S and Standring DN.** 1992. Hepatitis B virus capsid particles are assembled from core-protein dimmer precursors. *Proc. Natl. Acad. Sci. USA* 89:10046-10050.
27. **Seifer M, Zhou S, and Standring DN.** 1993. A micromolar pool of antigenically distinct precursors is required to initiate cooperative assembly of hepatitis B virus capsids in *Xenopus* oocytes. *J. Virol.* 67:249-257.
28. **Seifer M and Standring DN.** 1993. Recombinant human hepatitis B virus reverse transcriptase is active in the absence of the viral nucleocapsid or the viral replication origin, DR1. *J. Virol.* 67:4513-4520.
29. **Seifer M and Standring DN.** 1993. Stability governs the apparent expression of "particulate" hepatitis B e antigen by mutant hepatitis B virus core particles. *Virology* 196: 70-78.
30. **Chang C, Zhou S, Ganem D, and Standring DN.** 1994. Phenotypic mixing between different hepadnaviral nucleocapsid proteins reveals C protein dimerization to be cis-preferential. *J. Virol.* 68: 5225-5231.
31. **Seifer M and Standring DN.** 1994. A protease-sensitive hinge linking the two domains of the hepatitis B virus core protein is exposed on the viral capsid surface. *J. Virol.* 68: 5548-5555.
32. **Seifer M and Standring DN.** 1995. Assembly and antigenicity of hepatitis B virus core particles. *Intervirology* 38: 47-62.
33. **Seifer M and Standring DN.** 1995. Ribonucleoprotein complex formation by the human hepatitis B virus polymerase. *Intervirology* 38: 295-303.
34. **Hamatake R, Wang H-GH, Butcher JA, Bifano M, Clark G, Hernandez D, Zhang S, Racela J, Standring DN, and Colonno R.** 1996. Establishment of an *in vitro* assay to characterize hepatitis C virus NS3-4A protease trans-processing activity. *Intervirology* 39: 249-258.
35. **Innaimo SF, Seifer M, Bisacchi GS, Standring DN, Zahler R, and Colonno R.** 1997. Identification of BMS-200475 as a potent and selective inhibitor of hepatitis B virus. *Antimicrob. Agents Chemother.* 41: 1444-1448.

36. **Seifer M, Hamatake R, Bifano M, and Standing DN.** 1998. Generation of replication-competent hepatitis B virus nucleocapsids in insect cells. *J. Virol.* 72: 2765-2776.
37. **Seifer M, Hamatake R, Colonno R, and Standing DN.** 1998. *In vitro* inhibition of hepadnavirus polymerases by the triphosphates of BMS-200475 and lobucavir. *Antimicrob. Agents Chemother.* 42: 3200-3208.
38. **Genovesi EV, Lamb L, Medina I, Taylor D, Seifer M, Innaimo S, Colonno R, Standing DN, and Clark JM.** 1998. Efficacy of the carbocyclic 2'-deoxyguanosine nucleoside, BMS-200475, in the woodchuck model of hepatitis B virus infection. *Antimicrob. Agents Chemother.* 42: 3209-3217.
39. **Lau JYN and Standing DN.** 2000. Development of novel therapies for hepatitis C, p. 453-467. In: *Biomedical Research Reports: Hepatitis C*. Eds: T. J. Liang and J. Hoofnagle, NIH. Associated Press.
40. **Hong Z, Standing DN, Baroudy B and Lau JYN.** 2000. Development of novel anti-HCV therapies: HCV protease, helicase and polymerase as therapeutic targets. *Acta Gastroenterol Belg.* 63:210-212.
41. **Butkiewicz N, Yao N, Zhong W, Wright-Minogue J, Ingravall P, Zhang R, Durkin J, Standing DN, Baroudy B, Sangar DV, Lemon SM, Lau JYN, and Hong Z.** 2000. Virus-specific cofactor requirement and chimeric hepatitis C virus/GB virus B nonstructural protein 3. *J. Virol.* 74:4291-4301.
42. **Standing DN, Bridges EG, Placidi L, Faraj A, Loi AG, Pierra C, Dukhan D, Gosselin G, Imbach J-L, Hernandez B, Juodawlkis A, Tennant B, Korba B, Cote P, Cretton-Scott E, Schinazi RF, Myers M, Bryant ML, and Sommadossi J-P.** 2001. Antiviral β -L-nucleosides specific for hepatitis B virus infection. *Antiviral Chemistry and Chemotherapy*. 12 (Suppl. 1): 119-129.
43. **Jeannot F, Gosselin G, Standing DN, Bryant M, Sommadossi J-P, Guilla Loi A, La Colla P, Mathe C.** 2002. Synthesis and studies of 3'-C-trifluoromethyl nucleoside analogues bearing adenine or cytosine as the base. *Bioorg Med Chem.* 10:3153-3161.
44. **Benzaria S, Pierra C, Bardiot D, Cretton-Scott E, Bridges EG, Zhou XJ, Standing DN, Gosselin G.** 2003. Monoval-LdC: efficient prodrug of 2'-deoxy- β -l-lycidine (L-dC), a potent and selective anti-HBV agent. *Nucleosides, Nucleotides Nucleic Acids.* 22:1003-1006.
45. **Pierra C, Benzaria S, Dukhan D, Loi AG, La Colla P, Bridges EG, Mao J, Standing DN, Sommadossi J-P, Gosselin G.** 2004. Synthesis, physicochemical and pharmacokinetic studies of potential prodrugs of β -L-2'-deoxycytidine, a selective and specific anti-HBV agent. *Antiviral Chem Chemother.* 15:269-279.

46. Gosselin G, Pierra C, Benzaria S, Duhkan D, Imbach J-L, Loi A-G, La Colla P, Cretton-Scott E, Bridges EG, Standring DN and Sommadossi J-P. 2004. β -L-2'-deoxythymidine (L-dT) and β -L-2'-deoxycytidine (L-dC): How simple structures can be potent, selective and specific anti-HBV drugs, p 309-317. *Frontiers I Nucleosides and Nucleic Acids*, IHL Press: Arlington, Massachusetts.
47. Pierra C, Amador A, Benzaria S, Cretton-Scott E, D'Amours M., Mao J, Mathieu S, Moussa A., Bridges EG, Standring DN, Sommadossi J-P, Storer R, Gosselin G. 2006. Synthesis and pharmacokinetics of valopicitabine (NM283), an efficient prodrug of the potent anti-HCV agent 2'-C-methylcytidine. *J. Med. Chem.* 49:6614-6620.
48. Benzaria S, Bardiot D, Bouisset T, Counor C, Rabeson C, Pierra C, Storer R, Loi AG, Cadeddu A, Mura M, Musiu C, Luzzi M, Loddo R, Bergelson S, Bichko V, Bridges E, Cretton-Scott E, Mao J, Sommadossi J-P, Seifer M, Standring DN, Tausek M, Gosselin G, La Colla P. 2007. 2'-C-methyl branched pyrimidine ribonucleoside analogues: potent inhibitors of RNA virus replication. *Antiviral Chem & Chemother.* 18:225-242.
49. Seifer M, Patty A, Serra I, Li B, Standring DN. 2009. Telbivudine, a nucleoside analog inhibitor of HBV polymerase, has a different *in vitro* cross-resistance profile than the nucleotide analog inhibitors adefovir and tenofovir. *Antiviral Res.* 81(2):147-155.
50. Seifer M, Patty A, Gosselin G, Sommadossi J-P, Standring DN. *In vitro* studies on inhibitors of hepatitis B virus replication reveal differences in mechanism of action between telbivudine versus tenofovir or lamivudine. *Antimicrob. Agents Chemother.*, submitted.
51. Golitsina NL, Danehy FT, Fellows R, Cretton-Scott E, Standring DN. 2009. Evaluation of the role of three candidate human kinases in the conversion of the hepatitis C virus inhibitor 2'-C-methyl-cytidine to its 5'-monophosphate metabolite. *Antiviral Res.*, submitted.

ABSTRACTS SINCE 2001

1. Juodawlkis A, Bridges EG, Cretton-Scott E, Standring DN, Benzaria S, Pierra C, Gosselin G, Imbach JL, Tennant B, Korba B, Sommadossi J-P, and Bryant ML. Synergistic antiviral L-nucleosides specific for hepatitis B virus infection [Abstract]. *Antiviral Res* 2001;50:A43.
2. Seifer M, Zhou F, Faraj A, Duhkan D, Gosselin G, Imbach JL, Pierra C, Benzaria S, Loi AG, Sommadossi J-P, Bryant ML, and Standring DN. *In vitro* studies on the mechanism of action of L-nucleoside inhibitors of hepatitis B virus replication reveal differences between LdT and lamivudine [Abstract]. *Hepatology* 2001; 34 (4 Pt. 2):635A.
3. Pierra C, Benzaria S, Duhkan D, Loi AG, La Colla P, Bridges E, Mao J, Standring D, Sommadossi J-P and Gosselin G. Synthesis and study of some

derivatives of beta-L-2'-deoxycytidine, a potent, selective and specific anti-HBV agent [Abstract]. XIV International Conference on Antiviral Research 2001.

4. Seifer M, Patty A, Faraj A, Dukhan D, Gosselin G, Imbach JL, Pierra C, Benzaria S, Loi AG, La Colla P, Sommadossi J-P, Bryant ML, and Standring DN. *In Vitro* studies on the mechanism of action of L-nucleoside inhibitors of hepatitis B virus replication reveal differences between LdT and lamivudine [Abstract]. Antiviral Res 2001;HepDart Abstracts:82.
5. Benzaria S, Pierra C, Bardiot D, Cretton-Scott EM, Bridges EG, Zhou X-J, Standring DN, Storer R, and Gosselin G. Monoval-LdC: Efficient prodrug of 2'-deoxy-beta-L-cytidine (L-dC) a potent and selective anti-HBV agent [Abstract]. XV International Round Table: Nucleosides, Nucleotides and Nucleic Acids. Leuven, Belgium; 2002.
6. Pierra C, Benzaria S, Bardiot D, Cretton-Scott EM, Bridges EG, Zhou X-J, Standring DN, and Gosselin G. Synthesis and comparative study of valinyl ester prodrugs of the L-enantiomer of deoxycytidine, a potent and selective anti-HBV agent [Abstract]. 1st International meeting on Medicinal & Pharmaceutical Chemistry (IMMPC-1). Gazi University, Ankara, Turkey; 2002.
7. Benzaria S, Dukhan D, Faraj A, Imbach JL, Pierra C, Bridges EG, Cretton-Scott EM, Standring DN, Zhou X-J, Sommadossi J-P, and Gosselin G. L-enantiomers of natural 2'-deoxynucleosides revisited: L-dT and L-dC as potent and selective anti-HBV drugs. 1st International Meeting on Medicinal and Pharmaceutical Chemistry (IMMPC-1). Gazi University, Ankara, Turkey; 2002.
8. Dukhan D, Loi AG, La Colla P, Gosselin G, Standring DN, and Sommadossi J-P. 1'-C-methyl-beta-D-ribofuranosyl pyrimidine nucleosides revisited: synthesis and biological evaluation [Abstract]. XV International Round Table: Nucleosides, Nucleotides, and Nucleic Acids. Leuven, Belgium; 2002.
9. Standring DN, Lanford R, Wright T, Chung RT, Bichko V, Cretton-Scott EM, Pan-Zhou X-R, Bergelson S, Qu L, Tausek M, Bridges EG, Moussa A, Storer R, Pierra C, Benzaria S, Gosselin G, La Colla P, and Sommadossi J-P. NM283 has potent antiviral activity against chronic hepatitis C virus genotype 1 infection in the chimpanzee [Abstract]. 11th Triennial Symposium on Viral Hepatitis & Liver Disease, 6-10 April 2003, Sydney.
10. Standring DN, Lanford R, Wright T, Chung RT, Bichko V, Cretton-Scott EM, Pan-Zhou X-R, Bergelson S, Qu L, Tausek M, Bridges EG, Moussa A, Storer R, Pierra C, Benzaria S, Gosselin G, La Colla P, and Sommadossi J-P. NM283 has potent antiviral activity against genotype 1 chronic hepatitis C virus (HCV-1) infection in the chimpanzee [Abstract]. J Hepatol 2003;38(suppl. 2):3.

11. **Standring DN.** Treatment of HBV and HCV with novel antiviral agents [Abstract]. 9th International Antiviral Symposium and Workshop, 9-11 November 2003, Antalya, Turkey.
12. **Standring DN, Lanford R, Wright T, Chung RT, Bichko V, Cretton-Scott EM, Pan-Zhou X-R, Bergelson S, Qu L, Tausek M, La Colla M, Anand V, Mao J, Bridges EG, Moussa A, Chaudhuri N, Storer R, Pierra C, Benzaria S, Gosselin G, Shlaes D, La Colla P, and Sommadossi J-P.** NM283 has potent antiviral activity against chronic hepatitis C virus genotype 1 in the chimpanzee [Abstract]. HepDart Abstracts 2003.
13. **Pierra C, Benzaria S, Dukhan D, Imbach JL, Standring DN, Sommadossi J-P, and Gosselin G.** Nucleoside analogues as chemotherapeutic antiviral agents [Abstract]. Developments in Nucleic Acids 2003 Abstracts.
14. **Bergelson S, Benzaria S, Gosselin G, Storer R, Sommadossi J-P, and Standring DN.** The triphosphate form of NM107 inhibits BVDV NS5B polymerase *in vitro* and leads to chain termination of RNA synthesis [Abstract]. 11th International Symposium on Hepatitis C and Related Viruses, 3-7 October 2004, Heidelberg, Germany.
15. **Bichko V, Tausek MM, Qu L, LaColla M, Pierra C, Storer R, Gosselin G, Sommadossi J-P, and Standring DN.** Enhanced antiviral activity of NM107 in combination with interferon alfa [Abstract]. 11th International Symposium on Hepatitis C and Related Viruses, 3-7 October 2004, Heidelberg, Germany.
16. **Bichko V, Tausek MM, Qu L, LaColla M, Bergelson S, Pierra C, Benzaria S, Storer R, Gosselin G, Sommadossi J-P, and Standring DN.** Enhanced antiviral activity of NM107, alone or in combination with interferon alfa [Abstract]. J Hepatol 2005;42 Suppl.2:154.
17. **Bichko V, Tausek MM, Qu L, LaColla M, Bergelson S, Pierra C, Benzaria S, Storer R, Gosselin G, Sommadossi J-P, and Standring DN.** NM283 (valopicitabine) and interferon alfa act synergistically against bovine viral diarrhea virus *in vitro* [Abstract]. 12th International Symposium on Hepatitis C and Related Viruses, 2-6 October 2005, Montreal, Canada.
18. **Bichko V, Qu L, LaColla M, Tausek MM, Bergelson S, Pierra C, Storer R, Gosselin G, Sommadossi J-P, and Standring DN.** NM283 (valopicitabine) resistance in the bovine viral diarrhea virus *in vitro* infection model [Abstract]. 12th International Symposium on Hepatitis C and Related Viruses, 2-6 October 2005, Montreal, Canada.
19. **Bichko V, Qu L, LaColla M, Tausek MM, Bergelson S, Pierra C, Storer R, Gosselin G, Sommadossi J-P, and Standring DN.** Characterization of NM283 (valopicitabine) resistance profile using bovine viral diarrhea virus [Abstract]. Hepatology 2005; 42 (4 Suppl. 1):534A.

20. Seifer M, Patty A, Dukhan D, Gosselin G, Imbach JL, Sommadossi J-P, Bryant ML, and Standring DN. Telbivudine (LdT) preferentially inhibits second (+) strand HBV DNA synthesis [Abstract]. *Journal of Hepatology* 2005; 42 Suppl.2:151.
21. Seifer M, Patty A, Dukhan D, Gosselin G, Imbach JL, Sommadossi J-P, Bryant ML, and Standring DN. Telbivudine (LdT) preferentially inhibits second (+) strand HBV DNA synthesis [Abstract]. *Gastroenterology* 2005; 128 (4 Pt.1):A742-A743.
22. Seifer M, Patty A, Dukhan D, Gosselin G, Imbach JL, Sommadossi J-P, Bryant ML, and Standring DN. Telbivudine (LdT) preferentially inhibits second (+) strand HBV DNA synthesis [Abstract]. *APASL abstracts* 2005.
23. Bichko V, LaColla M, Tausek MM, Lалlos L, Gillum J, Qu L, Sommadossi J-P, and Standring DN. Long-term study of NM283 (valopicitabine) resistance using bovine viral diarrhea virus [Abstract]. *J Hepatol* 2006;44 Suppl. 2:S152.
24. Bichko V, LaColla M, Tausek MM, Lалlos L, Gillum J, Qu L, Sommadossi J-P, and Standring DN. NS5B mutations associated with NM283 (valopicitabine) resistance in bovine viral diarrhea virus [Abstract]. *American Society for Virology* 2006.
25. Bichko V, Lалlos L, Soubasakos M, LaColla M, Tausek MM, Gillum J, Sommadossi J-P, and Standring DN. NM283 (valopicitabine) resistance and cross-resistance in HCV and BVDV *in vitro* [Abstract]. 13th Int'l Symposium on Hepatitis C & Related Viruses 2006;169.
26. Standring DN, Seifer M, Patty A, Chapron C, Van Doorn LJ, Chao G, Brown NA, and Lai CL. HBV resistance determination from the telbivudine GLOBE registration trial [Abstract]. *J. Hepatol.* 2006;44 Suppl. 2:S191.
27. Cooksley H, Hou JL, Vitek L, Urbanek P, Abbott W, Gane E, Hofmann P, Zeuzem S, Wedemeyer H, Buti M, Standring DN, Chao G, Brown N, and Naoumov N. Impact of nucleoside treatment on antiviral T-cell reactivity in chronic hepatitis B: major differences depending on early viral suppression, HBeAg status and HBV genotype [Abstract]. *Annual Meeting of the British Association for the Study of the Liver*, 7-8 September 2006, Dublin.
28. Golitsina N, Danehy G, Fellows R, Patty A, Serra I, Seifer M, and Standring DN. Phosphorylation of telbivudine by three enzymes: implications for anti-hepatitis B virus activity *in vitro* and in the clinic [Abstract]. *Hepatology* 2006; 44 (4 Suppl. 1):S61A.
29. Cooksley H, Hou JL, Vitek L, Urbanek P, Abbott W, Gane E, Hofmann P, Zeuzem S, Wedemeyer H, Buti M, Standring DN, Chao G, Brown N, and Naoumov NV. Impact of nucleoside treatment on antiviral T-cell reactivity in chronic hepatitis B: major impact of early viral suppression, HBeAg status and HBV genotype [Abstract]. *Hepatology* 2006; 44 (4 Suppl. 1):S47A.

30. **Bichko V, Lалlos L, Soubasakos M, LaColla M, Tausek MM, Gillum J, and Standring DN.** Valopicitabine (NM283) is fully active against known HCV protease resistance mutations *in vitro* [Abstract]. EASL, 11-15 April 2007, Barcelona, Spain.
31. **Riva A, Cooksley H, Hou J, Vitek L, Urbanek P, Wedemeyer H, Manns M, Abbott W, Gane E, Hofmann P, Zeuzem S, Buti M, Standring DN, Chao G, Brown N, and Naoumov N.** Effector/memory subsets and functionality of CD4/CD8+ t-cells during potent antiviral therapy in chronic hepatitis B (CHB) [Abstract]. J Hepatol. 2007;46(suppl. 1):S43-44.
32. **Seifer M, Patty A, Chapron C, Van Doorn LJ, Belanger B, Brown N, and Standring DN.** Genotypic analysis of patients with evaluable HBV DNA after 1 year of telbivudine therapy in the GLOBE registration trial [Abstract]. Gastroenterology 2007; 132 (4 Suppl 2):A729.
33. **Standring DN, Patty A, Chapron C, Van Doorn LJ, Belanger B, Brown N, and Seifer M.** Resistance determination in patients experiencing virologic breakthrough following telbivudine or lamivudine therapy in the international GLOBE trial [Abstract]. Gastroenterology 2007; 132 (4 Suppl 2):A766.
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